

the relevant references.) Under these circumstances, Applicants respectfully submit that labeling of the elements in Figs. 2-3 with reference numerals is not considered to be required and would not be necessary. Please note that Figs. 4-7 include reference numerals, because the elements in these figures are referred to in the Specification text.

Claims 1-30 are pending in the present application before this amendment. By the present amendment, claim 1, 3, 8-9, 11-12, 16-18, 22, 25, 27, and 30 have been amended. Marked-up copies of the amended claims (shown in the revised format) are attached hereto. No new matter has been added.

Claims 8-9, 12, 17-18, 22, 25, and 27 stand objected to under 37 C.F.R. §1.75(c) as being in improper form because a multiple dependent claim cannot depend from another multiple dependent claim (directly or indirectly). Further, claims 10-11, 19-21, 23-24, 26, and 28-29 stand objected to under 37 C.F.R. §1.75(c) as being in improper form because they are dependent upon the improper multiple dependent claims listed above.

In response, claims 3, 8-9, 12, 16-18, 22, 25, and 27 have been amended, and the multiple dependency form has been removed. Withdrawal of the objection is respectfully requested.

Claims 1-5, 13, and 30 stand rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 4,930,118 (Sugihara).

First, as to the independent claims 1 and 30 (the Office Action, Item 8), it is respectfully noted that the system of Sugihara is completely different from that of the present invention. The system of Sugihara has a central station and a number of terminal stations, which can communicate with the central station either directly or via a repeater station. In contrast, the

system of the presently claimed invention **has no central station**. Each of the stations in the system of the presently claimed invention can act as an originating station, a destination station, or an intermediate station, adaptively and opportunistically.

This is fundamentally different from a fixed network such as that described by Sugihara. In the demand assignment TDMA communication system of Sugihara, a central station transmits a frame sync and a polling signal at periodic intervals to the terminal stations to elicit a response from the terminal stations. (See column 3, lines 13 to 23.) The polling signals are effectively addressed to terminal stations, whether registered or non-registered. (See column 3, lines 24 to 36).

According to the presently claimed invention, the probe signals, which each station in the network transmits at intervals, are effectively broadcast signals that any other station within range of the probing station will respond to. The stations can respond directly or indirectly via at least one intermediate station (possibly several). Such intermediate stations are not dedicated relay stations as in the system of Sugihara, but can be any of the stations of the network, each of which can act as an originating, destination or intermediate station.

Regarding limitation relating to the selection of a calling channel, the independent claims 1 and 30 have been amended to specify that the calling channel, which is defined by the system of the invention, is distinct from at least one data channel. It is respectfully submitted that Applicants are not clear as to how the Examiner interprets the cited passage in Sugihara (column 3, lines 4 to 8 and 13 to 14) to be equivalent to the definition of a calling channel (let alone one distinct from one or more data channels, as now claimed). As stated in the introductory portion of Sugihara (column 1, lines 7 to 11), the purpose of Sugihara's system is the detection of faults

in a central station receiving channel of a demand assignment TDMA communication system. The word "channel" is used in Sugihara in the context of a regular-channel receiver and spare-channel receiver for receiving response and test signals from remote terminal stations. (See column 2, lines 23 to 26). The system of Sugihara uses data from the regular-channel or spare-channel receivers according to which of them is determined to be operating correctly.

In the presently claimed invention, reference is made to calling channels and data channels. Data channels are channels in which message data is transmitted back and forth between stations, and would include the regular-channel and spare-channel of Sugihara. A calling channel is a separate channel used for transmitting and receiving connectivity information to allow the different stations to establish one another's present and connectivity/availability, for subsequent transmission of data between such stations in the data channels. There is nothing disclosed or suggested by Sugihara that suggests such different categories of channels.

Applicants respectfully submit that it has been clearly shown in the light of the above remarks that the systems of Sugihara and those of the presently claimed invention are completely different and operate in a fundamentally different manner.

As to claim 2, the Office Action (Item 9) indicates that Sugihara discloses the subject matter of claim 2. Applicants respectfully disagree and respectfully note that the cited passage relates to the sensing, at the central station, of the total energy of test signals transmitted by all of the terminal stations to the central station, and selecting one or the other of the regular-channel or the spare-channel receiver according to which of those receivers is deemed to be operating normally. There is no indication or suggestion in Sugihara that the terminal stations are provided with the more advanced functionality claimed and defined in claim 2.

As to claim 3, it is respectfully noted that the rationale given in the Office Action, Item 10 appears to have arisen from the misunderstanding of the cited passage. The mechanism described in the cited passage is responsive to the total energy of the test signals received from the terminal stations, and does not in any way distinguish between the terminal stations or contain data as claimed and defined in claim 3.

As to claim 4 (the Office Action, Item 11), Applicants respectfully submit that it is unclear to Applicants as to how the conclusion as stated in Item 11 that the subject matter of claim 4 is disclosed in the cited passages can be drawn. Regardless, Applicants respectfully submit that claim 4 is considered allowable at least since claim 4 depends from claims 1 and 3 that are now considered allowable in view of the remarks above.

As to claim 5, the Office Action in Item 12 incorrectly equates the broadcast probe signals defined in claim 5 with the polling signals of Sugihara. Once again, it is respectfully pointed out that any of the stations in the network of the present invention can transmit probe signals, whereas only the central station of Sugihara transmits polling signals, which are incorrectly equated with probe signals in the Office Action. The subject matter of claim 6, which refers to the special case of addressed probe signals that are addressed to at least one other station specifically, should make it clear that the probe signals referred to in the preceding broader claims are unaddressed.

As to claim 13, the Office Action (Item 13) incorrectly equates the above-discussed technique of Sugihara for determining correct operation of the regular-channel and spare-channel receivers with the contents of claim 13. The central station of Sugihara does not compare the number of reply signals received from different stations with a predetermined value, and it does

not vary its transmissions to the terminal stations, but merely selects which of two receivers it will use according to the total energy of the test signals received from all the terminal stations.

As shown above as a point-by-point comparison of the disclosure of Sugihara and the rejected claims, it is respectfully submitted the system of Sugihara is so **quite different** from the present invention, and the allowance of claims 1-5, 13, and 30 is respectfully requested.

Claims 1 and 30 stand rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,485,578 (Sweazy).

Sweazy describes a system for discovering the topology of a network, typically a computer network. A source node in the network issues so-called ping symbols that are addressed to specific target nodes in the network.

From a return signal, the source node can determine what type of node a target node is and how many intervening nodes or bridges are between the source and target nodes. The system, however, is limited to a network of fixed topology. Such a system effectively has a single channel and it can be noted that Sweazy does not refer to channels. If the Examiner is interpreting the multiple communication rings of Sweazy as channels, it should be pointed out that such rings are used both for transmitting and receiving ping symbols and regular data, and therefore the existence of these rings does not suggest the concept of separate calling and data channels.

The Office Action (Item 15) equates Sweazy's ping symbols with the probe signals of the present invention. However, it is important to appreciate that the ping symbol is a message addressed to another station, which is sent across the existing network to another node, the

existence of which is known. At column 15, lines 58 to 67 of Sweazy, it is made clear that such a ping symbol is identical to a routing symbol with the addition of a field which essentially determines the range of the ping symbol. In the present invention, probe signals are transmitted from each station at intervals on a selected calling channel, which is distinct from one or more data channels. It will be appreciated that the system of Sweazy makes no distinction between a calling channel and a data channel, but effectively uses the same "channel" for transmission of the ping symbols and other data.

In contradistinction, the probe signals of the present invention are effectively broadcast transmissions in the first instance, which are not addressed to other specific stations (except in the specific example of claim 6) and which are transmitted on a calling channel other than a data channel. Stations receiving the probe signals from a given station respond to the probe signals, either directly to the probing station or indirectly via other stations. The responses indicate to the transmitting station the availability of the responding stations as destination or intermediate stations. There is no suggestion of the latter function in Sweazy, and indeed the concept of "intermediate stations" indicating their availability in this sense is meaningless in the context of Sweazy.

The probing mechanism of the present invention does not require knowledge of "potentially existing target nodes" as in the case of the system of Sweazy. The very purpose of the probe signals is for the stations, which have no knowledge of one another's presence or even their existence both to publish their own presence to other stations on a selected calling channel and to establish the existence/presence of other stations.

The whole nature and purpose of the system of Sweazy is quite different from that of the present invention. There would be no reason why a person dealing with a fixed computer network, having effectively a single "channel" between the different nodes of the network, would need to define calling channels, to select among the channels, and to broadcast generalized probe signals on these calling channels to other nodes in the network. All that is necessary in the system of Sweazy is to establish the structure of the network (i.e. the location of terminals connected to the network) so that future communication can take place over the single existing "channel".

The Examiner refers to the disclosure in column 15, lines 30 to 36 of Sweazy as being equivalent to integer (d) of claims 1 and 30. All that the passage discloses is the possibility that a target leaf node has space to store incoming data. The passage says nothing about evaluating, at the given station (the probing station) the direct or indirect responses of other stations in order to identify other stations with which the given station can communicate optimally. The probing mechanism of the present invention is concerned with identifying stations with which a given station can communicate. The second predetermined criteria, which are used to evaluate the quality of such communication, are further enumerated in claim 16, and include a number of possible criteria, which are objectively determinable and relate to the quality of the channel between the stations.

In view of the above remarks, Applicants respectfully submit that claim 1 and 30 are now in condition for allowance and an indication thereof is respectfully requested.

Claims 6-7 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Sugihara in view of Sweazey.

Applicants respectfully submit that claims 6-7 are allowable at least since they depend from the base claim and the intervening claims that are considered to be allowable in view of the remarks above. In view of the insubstantial relevance of the two cited references to the present invention, Applicants believe and therefore respectfully submit that the rejections under 35 U.S.C. §103(a) are now moot.

The claim amendments made here are consistent with the amendments made in other cases related to the present application. These amendments are discussed below, for purposes of clarification.

Regarding the phrase “calling channel”, Applicants have made clarifying amendments to claims 1 and 30. Applicants also refer to the text of the International application, commencing with the paragraph bridging pages 10 and 11 and up to and including page 14. This section of the International application also describes the purpose and characteristics of calling channels as used in the method and system of the invention, and it will also be apparent from a reading of the section that there are a number of possible implementations of such calling channels, depending on the nature of the communication network. From this section, it will also be clear that calling channels will be defined between any of the plurality of stations.

Regarding the phrases “first predetermined criteria” and “second predetermined criteria”, these phrases are qualified in dependent claims 15 and 16. While the criteria specified in these claims are the most likely criteria for implementation of the method of the invention, it is quite conceivable that other criteria might be applicable in a particular network.



With regard to the phrases “responding directly or indirectly” and “direct and indirect responses”, we have made an amendment to the first phrase in claims 1 and 30 to make it clear that a station can respond either directly or indirectly, via at least one intermediate station.

Finally, with regard to the use of the phrase “communicate optimally”, it will be appreciated that what is optimal will depend on the criteria which are most important to the network operator or users. The example given in the abstract of the international application (the last two sentences) specifies the maximization of data throughput through the network with minimum interference and contention between stations, and this is the most likely optimal scenario. Therefore, we consider the phrase to be clear in the context of the specification as a whole.

The above comments generally apply equally to independent claims 1 and 30.

For the reasons set forth above, Applicants respectfully submit that claims 1-30 pending in this application are in condition for allowance over the cited references. This amendment is considered to be responsive to all points raised in the Office Action. Accordingly, Applicants

respectfully request reconsideration and withdrawal of the outstanding rejections and earnestly solicit an indication of allowable subject matter. Should the Examiner have any remaining questions or concerns, the Examiner is encouraged to contact the undersigned attorney by telephone to expeditiously resolve such concerns.

Respectfully submitted,

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